

CLAIMS

1. A dynamic network address registration system, comprising:
a first device;
a second device, said first device and said second device adapted to
5 communicate via a communications network; and
a controller coupled to said communications network, said controller
adapted to store address information for said first device therein, said controller
adapted to store address information for said second device therein, said
controller further adapted to provide said address information of said second
10 device to said first device such that a communication path can be efficiently
established between said first device and said second device.
2. The dynamic network address registration system of Claim 1 wherein
said communication path is efficiently established between said first device
15 and said second device without requiring said first device and said second device
to have static addresses.
3. The dynamic network address registration system of Claim 1 wherein
said controller is adapted to establish a virtual private network (VPN) between
20 said first device and said second device via said communications network.
4. The dynamic network address registration system of Claim 1 wherein
said first device, said second device, and said controller are further adapted to
be coupled to a second communications network.
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5. The dynamic network address registration system of Claim 4 wherein
said controller is adapted to inform said first device, via said second

communications network, as to whether or not said second device is coupled to said communications network.

6. The dynamic network address registration system of Claim 4 wherein
5 said controller is adapted to instruct said second device, via said second communications network, to couple to said communications network.

7. The dynamic network address registration system of Claim 4 wherein
10 said communications network is the internet.

8. The dynamic network address registration system of Claim 4 wherein
said second communications network is a circuit switched network.

9. A method for establishing a communication path between a first
15 device and a second device, said method comprising the steps of:

a) said first device contacting a controller to determine the status of
said second device;

b) said first device obtaining, from said controller, address information
for said second device; and

20 c) establishing a communication path via a communications network
between said first device and said second device.

10. The method for establishing a communication path between a first
device and a second device as recited in Claim 9 wherein step a) comprises:
25 said first device obtaining, from said controller, via a second
communications network, information as to whether or not said second device
is coupled to said communications network.

11. The method for establishing a communication path between a first device and a second device as recited in Claim 10 wherein step a) further comprises the step of:

5 a1) provided said second device is not coupled to said communications network, said first device instructing said second device, via said second communications network, to couple to said communications network and to said controller.

10 12. The method for establishing a communication path between a first device and a second device as recited in Claim 10 wherein step a) further comprises the step of:

15 a1) provided said second device is not coupled to said communications network, said controller instructing said second device, via said second communications network, to couple to said communications network and to said controller.

20 13. The method for establishing a communication path between a first device and a second device as recited in Claim 9 wherein step b) further comprises the step of:

b1) said first device providing said controller with address information for said first device.

25 14. The method for establishing a communication path between a first device and a second device as recited in Claim 9 wherein step c) comprises efficiently establish said communication path between said first device and

said second device, via said communications network, without requiring said first device and said second device to have static addresses.

15. The method for establishing a communication path between a first
5 device and a second device as recited in Claim 9 wherein step c) comprises establishing a virtual private network (VPN) between said first device and said second device via said communications network.

16. The method for establishing a communication path between a first
10 device and a second device as recited in Claim 9 wherein said communications network is the internet.

17. The method for establishing a communication path between a first
device and a second device as recited in Claim 9 wherein said second
15 communications network is a circuit switched network.

18. A controller for efficiently establishing a communication path
between a first device and a second device, said controller comprising:
means for coupling said controller to a communications network;
20 means for storing address information for said first device therein;
means for storing address information for said second device therein;
means for providing said address information of said second device to
said first device such that a communication path can be efficiently established
between said first device and said second device via said communications
25 network.

19. The controller of Claim 18 wherein said communication path is efficiently established between ~~said~~ first device and said second device without requiring said first device and said second device to have static addresses.

5 20. The controller of Claim 18 wherein said controller is adapted to establish a virtual private network (VPN) between said first device and said second device via said communications network.

10 21. The controller of Claim 18 wherein said first device, said second device, and said controller are further adapted to be coupled to a second communications network.

15 22. The controller of Claim 21 wherein said controller is adapted to inform said first device, via said second communications network, as to whether or not said second device is coupled to said communications network.

20 23. The controller of Claim 21 wherein said controller is adapted to instruct said second device, via said second communications network, to couple to said communications network.

24. The controller of Claim 21 wherein said communications network is the internet.

25 25. The controller of Claim 21 wherein said second communications network is a circuit switched network.

26. A dynamic network address minimal configuration system comprising:

a communication network adapted to provide communication paths;
said communications network includes primary and secondary communication
5 circuits;

network devices coupled to said communication network, said network
devices adapted to facilitate interaction and communications via said
communication network; and

a dynamic network address registration system coupled to said
10 communication network, said dynamic network address registration system
adapted to store information regarding the assignment of dynamic network
addresses to said network devices and provide said information to other
network devices.

27. The dynamic network address minimal configuration system of
15 Claim 26 in which said network devices are adapted to establish a network
connection via said secondary circuit and receive an assignment of a dynamic
network address which said network device then provides to said dynamic
network address registration system via said primary communication circuit.

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28. The dynamic network address minimal configuration system of
Claim 26 in which said communication network includes an integrated services
digital network (ISDN) basic rate interface (BRI) for connectivity to a wide
area network and an always on dynamic ISDN (AODI) feature is supported for
25 said ISDN BRI.

29. The dynamic network address minimal configuration system of Claim 28 in which said network devices are adapted to establish a network connection via a D channel of said ISDN BRI and receive an assignment of a dynamic network address which said network device then provides to said dynamic network address registration system via a B channel of said ISDN BRI.

30. The dynamic network address minimal configuration system of Claim 26 in which one of said network devices is a router.

31. The dynamic network address minimal configuration system of Claim 26 in which one of said network devices is a network address translator (NAT).

32. The dynamic network address minimal configuration system of Claim 26 in which said intermediate device is adapted to facilitate the establishment of a virtual private network (VPN) communication link via the Internet between a source network device and a destination network device.

33. The dynamic network address minimal configuration system of Claim 32 wherein said VPN is implemented via said primary communication circuit.

34. The dynamic network address minimal configuration system of Claim 26 wherein said communications network includes a wide area network (WAN).

35. The dynamic network address minimal configuration system of Claim 26 wherein said communications network includes a local area network (LAN).

5 36. A dynamic network address registration apparatus, comprising:
 an intermediate device adapted to facilitate automatic configuration of
network devices with information related to dynamic network internet protocol
(IP) addresses, said intermediate device comprising;
 a communications port for receiving and transmitting communication
10 frames via a communications network;
 a communication frame analysis component coupled to said
communications port, said communication frame analysis component adapted
to analyze information included in a communication frame and recognize if said
communication frame is requesting or providing a network IP address; and
15 an address mapping component coupled to said communication frame
analysis component, said address mapping component adapted to map one of
said dynamic network IP addresses to one of said network devices and provide
information regarding the association of other of said network devices with
other of said dynamic network IP addresses.

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37. The dynamic network address registration system of Claim 36 ,
wherein said network devices are coupled to secondary communications
circuits and primary communication circuits.

25 38. The dynamic network address registration system of Claim 36
wherein said intermediate device is utilized to establish a VPN is established
via said communications network.

39. The dynamic network address registration system of Claim 36 wherein said communication frame analysis component determines if a communication frame includes information to be mapped in said address mapping component.

40. The dynamic network address registration system of Claim 36 wherein said communication frame analysis component determines if a communication frame is requesting information from said address mapping component.

41. The dynamic network address registration system of Claim 36 wherein said communication frame analysis component extracts information identifying a desired location from a communication frame.

42. A dynamic network address configuration method comprising the steps of:

- a) obtaining a dynamic network address via a secondary communications circuit;
- b) transmitting information regarding said dynamic network address to a network address registration system via a primary communication system; and
- c) communicating information regarding the assignment of a dynamic network address from said network address registration system to network devices.

43. The dynamic network address configuration method of Claim 42 in which step b further comprises the step of storing in said dynamic network address registration system information regarding the association of a device and a dynamic network address assigned to said device.

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44. The dynamic network address configuration method of Claim 42 in which step c further comprises the steps of forwarding to said network device a network address associated with dynamic network address registration system.

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45. The dynamic network address configuration method of Claim 42 in which step c further comprises the steps of polling said dynamic network address registration system to determine if there are updates to information regarding a registered dynamic address.